CLAIMS

Having thus described the invention, what is claimed is:

1. A vehicle cruise control system, comprising:

(a) a system controller adapted to process information and to establish a cruise control speed range defined by an upper set speed and a lower set speed, a target set speed being defined in such speed range, said system controller comprising a processor, and being adapted to generate and send a command;

(b) a speed sensor adapted to sense vehicle speed and to communicate vehicle speed information to the system controller;

(c) a fuel controller adapted to sense fuel flow information, and to communicate fuel flow information to said system controller, said fuel controller being further adapted to receive a command from said system controller, and to execute an action corresponding to such command; and

(d) a driver interface adapted to receive driver input and to communicate such driver input to said system controller, such driver input including at least one of a driver determined such upper set speed, and a driver determined such lower set speed, wherein at least one of the upper set speed and the lower set speed can be selected by such driver independent of the target set speed.

2. A vehicle cruise control system as in Claim 1 wherein said processor of said system controller generates the command when vehicle speed approximates the driver determined upper set speed, or vehicle speed approximates the driver determined lower set speed, and wherein speeds between the upper set speed and the lower set speed generally define a desired operating speed range.

3. A vehicle cruise control system as in Claim 1 wherein the command is generated in response to the vehicle speed being proximate the lower set speed, the command comprising an instruction communicated to said fuel controller to change fuel flow rate so as to attenuate loss of vehicle speed.

4. A vehicle cruise control system as in Claim 3 wherein the command further comprises commanding a decrease in fuel flow rate as the vehicle speed approaches, and prior to the vehicle speed reaching, the target set speed from the lower set speed.

5. A vehicle cruise control system as in Claim 1 wherein said driver input comprises a driver determined upper speed, a driver determined lower speed, and a driver determined target speed.

6. A vehicle cruise control system as in Claim 1 wherein said driver input comprises a driver determined upper set speed, and a driver determined lower set speed,

said processor being adapted to select an initial default target set speed between the upper set speed and the lower set speed, said system controller being adapted to process vehicle speed, fuel flow, and driver input to generate a command, said system controller being adapted to communicate such command to said fuel controller.

7. A vehicle cruise control system as in Claim 1 wherein said driver input comprises a driver determined target set speed, said system controller providing at least one of an upper set speed and a lower set speed,

the cruise control system being adapted to receive and implement ongoing redefinition of the upper set speed, the lower set speed, and/or the target set speed while said vehicle cruise control system is in operation controlling speed of a vehicle.

8. A vehicle cruise control system as in Claim 1, said driver input including at least one of an upper set speed, and a lower set speed,

said processor being adapted to select a target set speed, and the remaining one of the upper set speed and the lower set speed, consistent with the driver input, thereby to establish a target set speed, and a desired operating speed range between the upper set speed and the lower set speed.

9. A vehicle cruise control system as in Claim 1 wherein the command is generated in response to the vehicle speed being proximate the upper set speed, the command comprising an instruction communicated to said fuel controller to change fuel flow rate so as to attenuate increase in vehicle speed.

10. A vehicle cruise control system as in Claim 9 wherein the command further comprises commanding an increase in real time fuel flow rate as the vehicle speed approaches, and prior to the vehicle speed reaching, the target set speed from the upper set speed.

11 A vehicle cruise control system as in Claim 1, said fuel flow controller generally maintaining a constant fuel flow rate relative to the fuel flow rate corresponding to the target set speed, wherein said processor of said system controller generates the command when vehicle speed approximates the upper set speed, or vehicle speed approximates the lower set speed.

12. A vehicle cruise control system as in Claim 11, said vehicle cruise control system further comprising a database adapted to store fuel flow information,

said command based at least in part on such fuel flow information stored in said database.

13. A vehicle cruise control system as in Claim 11 wherein the command is generated in response to the vehicle speed being proximate the lower set speed, the command comprising an instruction communicated to said fuel controller to change fuel flow rate so as to attenuate loss of vehicle speed.

14. A vehicle cruise control system as in Claim 13 wherein the command further comprises commanding a decrease in real time fuel flow rate as the vehicle speed approaches, and prior to the vehicle speed reaching, the target set speed from the lower set speed.

15. A vehicle cruise control system as in Claim 13 wherein the command further comprises commanding an exponential decrease in the change in fuel flow rate, from the real time fuel flow rate, toward the fuel flow rate corresponding to the target set speed.

16. A vehicle cruise control system as in Claim 11 wherein the command is generated in response to the vehicle speed being proximate the upper set speed, the command comprising an instruction communicated to said fuel controller to change real time fuel flow rate so as to attenuate increase in vehicle speed.

17. A vehicle cruise control system as in Claim 16 wherein the command further comprises commanding an increase in real time fuel flow rate as the vehicle speed approaches, and prior to the vehicle speed reaching, the target set speed from the upper set speed.

18. A vehicle cruise control system as in Claim 16 wherein the command further comprises commanding an exponential decrease in the change in fuel flow rate, from the real time fuel flow rate, toward the fuel flow rate corresponding to the target set speed.

19. A vehicle cruise control system as in Claim 1 wherein said cruise control system is adapted to receive and implement ongoing driver inputs changing any of the upper set speed, the lower set speed, and the target set speed, while said vehicle cruise control system is in operation controlling speed of a vehicle.

20. A vehicle cruise control system as in Claim 1, said system controller being further adapted to process vehicle speed, and analyze changes in vehicle speed versus time to thereby compute acceleration, said system controller being adapted to analyze the combination of acceleration, vehicle speed, fuel flow rate, and driver input to generate such command.

21. A vehicle cruise control system as in Claim 20 wherein said system controller generates the command when absolute acceleration of the vehicle exceeds a predetermined acceleration rate threshold, and wherein the command comprises commanding a corresponding change in fuel flow rate based, at least in part, on the acceleration rate.

22. A vehicle cruise control system as in Claim 1 wherein the said vehicle cruise control system maintains the lower set speed for a predetermined time period, subsequently said system controller commands said fuel controller to increase real time fuel flow rate.

23. A vehicle cruise control system as in Claim 1, said input including defining a driver anticipated stop, said system controller commanding said fuel controller to reducing fuel flow, accommodating such driver anticipated stop.

24. A vehicle comprising a vehicle cruise control system as in Claim 1.

25. A vehicle cruise control system comprising:

(a) a system controller adapted to process information, said system controller comprising a processor, and being adapted to generate and send a command;

(b) a speed sensor adapted to sense vehicle speed and to communicate vehicle speed information to the system controller;

(c) a fuel controller adapted to sense fuel flow information, and to communicate fuel flow information to said system controller, said fuel controller being further adapted to receive a command from said system controller, and to execute an action corresponding to such command; and

(d) a driver interface adapted to receive driver input and to communicate such driver input to said system controller, such driver input including a driver determined target set speed, and a plurality of driver selectable terrain types, each of said driver selectable terrain types having a predetermined upper set speed and a predetermined lower set speed, relative to the target set speed, corresponding to the driver selectable target set speed,

said processor being adapted to process the vehicle speed, the fuel flow, and the driver input to generate a command, said system controller being adapted to communicate such command to said fuel controller.

26. A vehicle cruise control system as in Claim 25 wherein said processor of said system controller generates the command when vehicle speed approximates the upper set speed, or vehicle speed approximates the lower set speed, and wherein speeds between the upper set speed and the lower set speed generally define a desired operating speed range.

27. A vehicle cruise control system as in Claim 25 wherein the command is generated in response to the vehicle speed being proximate the lower set speed, the command comprising an instruction communicated to said fuel controller to change fuel flow rate so as to attenuate loss of vehicle speed.

28. A vehicle cruise control system as in Claim 27 wherein the command further comprises commanding a decrease in fuel flow rate as the vehicle speed approaches, and prior to the vehicle speed reaching, the driver determined target set speed from the lower set speed.

29. A vehicle cruise control system as in Claim 25 wherein the command is generated in response to the vehicle speed being proximate the upper set speed, the command comprising an instruction communicated to said fuel controller to change fuel flow rate so as to attenuate increase in vehicle speed.

30. A vehicle cruise control system as in Claim 29 wherein the command further comprises commanding an increase in relative fuel flow rate as the vehicle speed approaches, and prior to the vehicle speed reaching, the driver determined target set speed from the upper set speed.

31. A vehicle cruise control system as in Claim 25, said fuel flow controller generally maintaining a constant fuel flow rate relative to the fuel flow rate corresponding to the driver determined target set speed, wherein said processor of said system controller generates the command when vehicle

speed approximates the upper set speed, or vehicle speed approximates the lower set speed.

32. A vehicle cruise control system as in Claim 31, said vehicle cruise control system further comprising a database adapted to store fuel flow information, said command based at least in part on such fuel flow information stored in said database.

33. A vehicle cruise control system as in Claim 31 wherein the command is generated in response to the vehicle speed being proximate the lower set speed, the command comprising an instruction communicated to said fuel controller to change fuel flow rate so as to attenuate loss of vehicle speed.

34. A vehicle cruise control system as in Claim 33 wherein the command further comprises commanding a decrease in real time fuel flow rate as the vehicle speed approaches, and prior to the vehicle speed reaching, the driver determined target set speed from the lower set speed.

35. A vehicle cruise control system as in Claim 33 wherein the command further comprises commanding an exponential decrease in the change in fuel flow rate, from the real time fuel flow rate, toward the fuel flow rate corresponding to the driver determined target set speed.

36. A vehicle cruise control system as in Claim 31 wherein the command is generated in response to the vehicle speed being proximate the upper set speed, the command comprising an instruction communicated to said fuel controller to change real time fuel flow rate so as to attenuate increase in vehicle speed.

37. A vehicle cruise control system as in Claim 36 wherein the command further comprises commanding an increase in real fuel flow rate as the vehicle speed approaches, and prior to the vehicle speed reaching, the driver determined target set speed from the upper set speed.

38. A vehicle cruise control system as in Claim 36 wherein the command further comprises commanding an exponential decrease in change in fuel flow rate, from the real time fuel flow rate, toward the fuel flow rate corresponding to the driver determined target set speed.

39. A vehicle cruise control system as in Claim 25 wherein said cruise control system is adapted to receive and implement ongoing driver inputs changing any of the upper set speed, the lower set speed, and the target set speed, while said vehicle cruise control system is in operation controlling speed of a vehicle.

40. A vehicle cruise control system as in Claim 25, said system controller being further adapted to process vehicle speed, and analyze changes in vehicle speed versus time to thereby compute acceleration, said system controller being adapted to analyze the combination of acceleration, vehicle speed, fuel flow rate, and driver input to generate such command.

41. A vehicle cruise control system as in Claim 40 wherein said system controller generates the command when absolute acceleration of the vehicle exceeds a predetermined acceleration rate threshold, and wherein the command comprises commanding a corresponding change in fuel flow rate based, at least in part, on the acceleration rate.

42. A vehicle cruise control system as in Claim 25 wherein the said vehicle cruise control system maintains the lower set speed for a predetermined time period,

subsequently said system controller commands said fuel controller to increase real time fuel flow rate.

43. A vehicle cruise control system as in Claim 25, said input including defining a driver anticipated stop, said system controller commanding said fuel controller to reducing fuel flow, accommodating such driver anticipated stop.

44. A vehicle comprising a vehicle cruise control system as in Claim 25.

45. A method of controlling vehicle speed comprising:

(a) processing information in a system controller and establishing a cruise control speed range defined by an upper set speed and a lower set speed, a target set speed being defined in such speed range;

(b) sensing vehicle speed in a speed sensor and communicating vehicle speed information to the system controller;

(c) sensing fuel flow information in a fuel controller and communicating such fuel flow information from said fuel controller to said system controller, said fuel controller being further adapted to receive a command from said system controller, and to execute an action corresponding to such command; and

(d) receiving driver input in a driver interface and communicating such driver input to said system controller, such driver input including at least one of a driver determined such upper set speed, and a driver determined such lower set speed, wherein at least one of the upper set speed and the lower set speed can be selected by such driver independent of the target set speed.

46. A method of controlling vehicle speed as in Claim 45 wherein the command is generated in response to the vehicle speed being proximate the lower set speed, the command comprising an instruction transmitted to said fuel controller to change fuel flow rate so as to attenuate loss of vehicle speed.

47. A method of controlling vehicle speed as in Claim 45 wherein the command is generated in response to the vehicle speed being proximate the upper set speed, the command comprising an instruction transmitted to said fuel controller to change fuel flow rate so as to attenuate increase in vehicle speed.

48. A method of controlling vehicle speed as in Claim 45 wherein said fuel flow controller generally maintains a constant fuel flow rate relative to the fuel flow rate corresponding to the target set speed, wherein said system controller generates the command when vehicle speed approximates the upper set speed, or vehicle speed approximates the lower set speed.

49. A method of controlling vehicle speed as in Claim 48 wherein the command is generated in response to the vehicle speed being proximate the lower set speed, the command comprising an instruction transmitted to said fuel controller to change fuel flow rate so as to attenuate loss of vehicle speed.

50. A method of controlling vehicle speed as in Claim 48 wherein the command is generated in response to the vehicle speed being proximate the upper set speed, the command comprising an instruction transmitted to said fuel controller to change real time fuel flow rate so as to attenuate increase in vehicle speed.

51. A method of controlling vehicle speed as in Claim 48 wherein the driver input includes a driver determined target set speed, said system controller providing at least one of an upper set speed and a lower set speed,

the cruise control system being adapted to receive and implement ongoing redefinition of the upper set speed, the lower set speed, and/or the target set speed while said vehicle cruise control system is in operation controlling speed of a vehicle.